

THE STATUS OF THE CLAIMS

1. (Original) An apparatus comprising a first resonator, wherein said first resonator comprises:

a resonating element, wherein said resonating element has a resonant frequency and nodal points;

a first electrode, wherein said first electrode underlies said resonating element and is separated from said resonating element by a first gap;

at least one support, wherein:

said support has a first end and a second end;

said first end of said support and said resonating element are joined at one of said nodal points; and

said support has a length that is less than one-quarter wavelength of said resonant frequency.

2. (Original) The apparatus of claim 1 wherein said resonating element is a beam.

3. (Original) The apparatus of claim 1 comprising four supports, wherein each of said supports and said resonating element are joined at a respective one of said nodal points.

4. (Original) The apparatus of claim 1 comprising an anchor that is attached to a ground plane, wherein said second end of said support and said anchor are joined.

5. (Original) The apparatus of claim 1 wherein said length of said support is less than one-half of a length of said resonating element.

6. (Original) The apparatus of claim 1 wherein said length of said support is less than one-quarter of a length of said resonating element.

7. (Original) The apparatus of claim 1 wherein said length of said support is not more than 5 microns.

8. (Original) The apparatus of claim 1 wherein said length of said support is not more than 2 microns.

9. (Original) The apparatus of claim 8 wherein a width of said support is not more than 2 microns and a thickness of said support is not more than 2 microns.

10. (Original) The apparatus of claim 1 wherein said length of said support is not more than 1 micron.

11. (Original) The apparatus of claim 1 wherein said length of said support is equal to a width of said support.

12. (Original) The apparatus of claim 1 wherein said first gap has a minimum size when a bias voltage is applied, and wherein said minimum size is determined by an amplitude of said bias voltage.

13. (Original) The apparatus of claim 1 wherein said resonating element comprises a material selected from the group consisting of silicon, diamond and metals.

14. (Original) The apparatus of claim 1 wherein said first electrode is electrically connected to a source of an excitation voltage and wherein said resonating element is electrically connected to a source of a bias signal.

15. (Original) The apparatus of claim 1 comprising a second resonator, wherein said second resonator has a second resonating element, and wherein said second resonating element has a second resonant frequency and is mechanically coupled to said resonating element.

16. (Original) The apparatus of claim 14 wherein said apparatus is a filter.

17. (Original) The apparatus of claim 1 wherein said apparatus is an oscillator.

18. (Original) The apparatus of claim 1 further comprising a second electrode, wherein said second electrode overlies said resonating element and is separated from said resonating element by a second gap.

19. (Original) An apparatus comprising:

a resonating element, wherein said resonating element has:

a resonant frequency;

a first end and a second end;

a first nodal point proximal to said first end; and

a second nodal point proximal to said second end;

an electrode, wherein said electrode underlies said resonating element between said first nodal point and said second nodal point, and further wherein said electrode is separated from said resonating element by a gap;

a first support, wherein:

said first support has a first end and a second end; and

said first end of said first support and said resonating element are joined at said first nodal point;

a second support, wherein:

said second support has a first end and a second end; and

said first end of said second support and said resonating element are joined at said second nodal point;

and wherein said first support and said second support each have a length that is less than one-eighth wavelength of said resonant frequency.

20. (Original) An apparatus comprising:

resonating means, wherein said resonating means is characterized by a resonant frequency and flexural nodal points;

support means for supporting said resonating means, wherein said support means is coupled to said resonating means proximal to at least one of said flexural nodal points, wherein said support means has a length that is less than one quarter of said resonant frequency.

21. (Original) An apparatus comprising a resonator, wherein said resonator comprises:

a resonating element having flexural nodal points; and

at least two supports, wherein said two supports and said resonating element are mechanically coupled proximal to two of said flexural nodal points, and wherein said two supports each have a length that is less than one-quarter wavelength of said resonant frequency.

22. (Original) An apparatus comprising a resonator, wherein said first resonator comprises:

- a resonating element, wherein said resonating element is characterized by a resonant frequency, and has a first end and a second end;

- an electrode, wherein said electrode underlies said resonating element, wherein said electrode is separated from said resonating element by a gap;

- a first support, wherein:

- said first support has a first end and a second end; and

- said first end of said first support and said resonating element are joined proximal to said first end of said resonating element;

- a second support, wherein:

- said second support has a first end and a second end; and

- said first end of said second support and said resonating element are joined proximal to said second end of said resonating element;

and wherein said first support and said second support each have a length that is less than one-eighth wavelength of said resonant frequency.